

Masami MIZUTANI* & Sinske HATTORI*: **The distribution
of *Tuzibeanthus* (Hepaticae)****

水谷正美*・服部新佐*: ツジベゴヘイゴケ属 (苔類) の分布

Tuzibeanthus is a monotypic genus of Ptychanthoideae of Jubulaceae (=Lejeuneaceae), based on Japanese *T. porelloides* Hatt. (Hattori, 1947 & 1950). Mizutani (1961) made a critical review of the Japanese members of Jubulaceae, in which he transferred *Ptychanthus chinensis* Steph. to *Tuzibeanthus* and reduced *T. porelloides* to a synonym under *T. chinensis*. *Ptychanthus chinensis* was described by Stephani (1912) from Shen-si, China. Herzog (1930) reported this taxon from Yunnan and southern Szechwan, China; Kashyap and Chopra (1932) from Almora and Mussoorie, India; and Chopra (1938) from Darjeeling, India. According to Verdoorn (1934), however, Kashyap and Chopra's record (1932) was caused by an error in identification; their materials were *Ptychanthus striatus* (Lehm. et Lindenb.) N. var. *retusus* (Reinw. Bl. et N.) Verd.*** As to Chopra's record (1938) we could not confirm the identity, but we have examined an Indian collection determined by R. S. Chopra as *Ptychanthus chinensis* which, however, proved to be *P. striatus* var. *retusus*. This collection is labeled, "Nainital (6-7000 ft.) U. P., India, on tree trunks, coll. and det. R. S. Chopra, VIII 1949, herb. Punjab Univ."

Since Hattori's report (1950) *Tuzibeanthus chinensis* has been collected in Japan from several localities: Kanto distr., Mts. Chichibu (Hattori 1950; Takaki 1953; Mizutani 1961; Inoue 1962); S. Japan Alps, Mt. Shiozawa (Takaki 1953; Mizutani 1961); Kinki distr., Nara, Dorokawa (Mizutani 1961); Shikoku, Mt. Yokogura near Kochi (Hattori 1950; Kamimura 1952; Mizutani 1961); Kyushu, near Hitoyoshi (Hattori 1951, 1952; Mizutani 1961); Mt. Goyu in Miyazaki Pref. (Amakawa 1951); Shiiba in Miyazaki Pref. (Hattori 1951; Amakawa 1955; Mizutani 1961). Before Mizutani's publication (1961) the records were made under the name *Tuzibeanthus porelloides* except for that of Kamimura (1952) whose record was for *Lopholejeunea yokogurana*, a later synonym.

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*** We also found *Ptychanthus striatus* in bryophyte collections made by Dr. N. S. Parihar in the same area.

Verdoorn (1934) remarks that *Ptychanthus chinensis* is a "verwandte Art" of *P. striatus* and *P. sulcatus* (N.) N., but we do not think so. He (1934, p. 118) considers *P. chinensis* to be identical with *Mastigolejeunea mariana* Steph. However, we think *M. mariana* to be conspecific with *Ptychanthus irawaddensis**. Stephani's description (1924) of *Mastigolejeunea mariana* includes such important characteristics as (1) the obtuse leaf-apex, (2) the widely truncate underleaf-apex, (3) the bract obtuse at apex and with "*carina grosse alata, ala semirotunda, integerrima*" (4) "*lobulus ad plicam parvam-angustam reductus*," and (5) the bracteole with "*apice emarginato, angulis acutis*." These characteristics clearly show that this taxon is not conspecific with *Tuzibeanthus chinensis*, but with *Ptychanthus irawaddensis*. Among the above-mentioned five characteristics, (3) and (4) are especially important for the separation of the genera, *Ptychanthus* and *Tuzibeanthus*. In *Tuzibeanthus* large, semi-rotund *alae* are never seen and the bract-lobule is long-ligulate with a rounded apex.

Schuster (1961, 1963) treats the genus *Tuzibeanthus* as a subgenus under *Mastigolejeunea*, but we can not agree with him, because in *Mastigolejeunea* the perianth is deeply triplicate, the leaf-insertion is U-shaped, and the branching is all intercalary (never of *Frullania* type) except for the subfloral innovations of *Radula*-type which are two per perianth. We think the genus most closely related to *Tuzibeanthus* is *Ptychanthus*, as Hattori (1947 *et seq.*) and Mizutani (1961, p. 151) point out. The synonymy and representative specimens of the present taxon, which we could examine and confirm up to the present, are listed below.

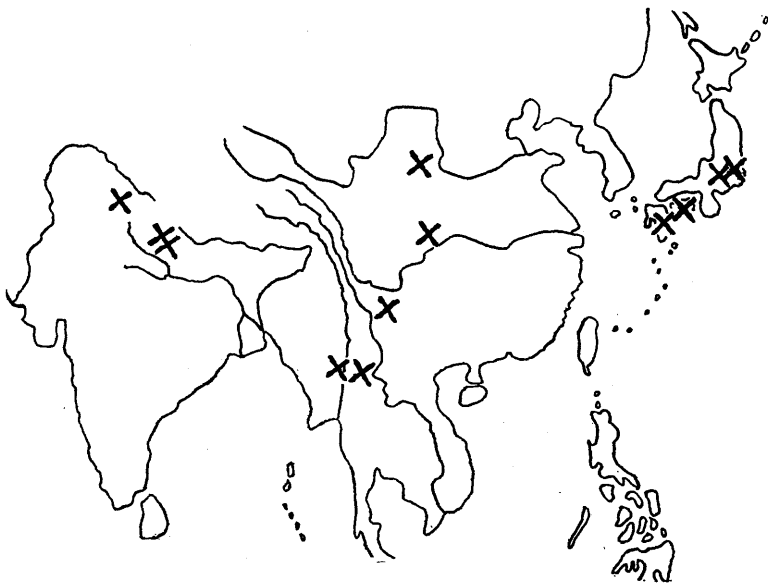
* *Ptychanthus irawaddensis* (Steph.) Steph., Spec. Hepat. **4**: 144 (1912). Syn.: *Ptycholejeunea irawaddensis* Steph., Hedwigia **28**: 259 (1889); **29**: 5 (1890); *Mastigolejeunea mariana* Steph., Spec. Hepat. **6**: 564 (1924). Distr.: Burma and China (Yunnan).

Verdoorn (1934, p. 122) reduced *P. irawaddensis* to a synonym of *P. striatus* (Lehm. et Lindenb.) N. var. *retusus* (Reinw., Bl. et N.) Verd. However, we think *P. irawaddensis* to be distinct from *P. striatus* at the species-level, though we admit that it is very closely related to *P. striatus* var. *retusus*, and further detailed studies with more adequate materials may reveal these two taxa will have to be considered as conspecific. In *P. irawaddensis* the leaves are usually obtuse or rounded at the apex and entire along the margins, whereas in *P. striatus* var. *retusus* according to the taxonomic concept of Verdoorn (1934) who included *P. effusus* Steph. and *P. piriformis* Steph. in synonymy of *P. striatus* var. *retusus*, the leaves are often scarcely toothed above and acute at apex (seldom subacute to obtuse). Such differences are also found to some degree in the bracts and bracteoles.

Tuzibeanthus [Hatt., *Biosphaera* 1: 5 (1947)] *chinensis* (Steph.) Mizut., Jour. Hattori Bot. Lab. 24: 151, fig. 5 (1961). Syn.: *Ptychanthus chinensis* Steph., Spec. Hepat. 4: 744 (1912); *Tuzibeanthus porelloides* Hatt., l.c., sine descr.; Jour. Hattori Bot. Lab. 3: 47, fig. 39 (1950); *Lopholejeunea yokogurana* Kamim., Acta Phytotax. Geobot. 14: 107, fig. 1 (1952); *Mastigolejeunea porelloides* (Hatt.) Schust., Bryologist 64: 167 (1961).

Important specimens examined. **China** interior: Prov. Schen-si sept., prope In-kia-po, Aug. 25, 1896, leg. Rev. J. Girald (Herb. Levier 1881), paratype in G.; —, in mte. Kuan-tou-san, Oct. 1897, leg. Rev. J. Girald (Herb. E. Levier 1878), lectotype in G.; — (Herb. E. Levier 1879 & 1880), paratypes in G.; Prov. Yunnan, 9.3.1914, leg. Handel-Mazzetti 462 (det. by Th. Herzog as *Ptychanthus chinensis* f. *convolutus* Herz.), JE & NICH; —, 11.5.1915, leg. Handel-Mazzetti 6263 (det. Th. Herzog as *P. chinensis*), JE & NICH; Prov. Setschwan austro-occid., 26.3.1914, leg. Handel-Mazzetti 962 (det. Th. Herzog as *P. chinensis*), JE & NICH; —, 30.5.1914, leg. Handel-Mazzetti 2722 (det. Th. Herzog as *P. chinensis*), JE & NICH. **Burma**: The Crag, east of Taunggyi, alt. ca. 4500 ft., on soil, Jan. 24, 1957, leg. Lois Egerod B-8, UC & NICH; —, alt. 5000 ft., Grey Rock Trail, Feb. 1, 1957, leg. Lois Egerod B-49, UC & NICH; Eastern Shan States, near Mong Lwe Kwoi, ca. 60 mi. northeast of Kengtung, near inscriptions on shaded hillside, Feb. 28, 1957, leg. Lois & Storn Egerod B-90, UC & NICH. New to Burma! **India**: Mussoorie area, Kempty Fall, alt. 4500 ft., on tree-trunk, May 10, 1965, leg. Z. Iwatsuki, A.J. & Evelyn Shap 12390a, TENN & NICH; W. Himalayas, Almora, Talwari, 7400 ft., on tree-trunk, June 1959, leg. N. S. Parihar 1959-1/21 (with *Ptychanthus striatus*), NICH & herb. Parihar; —, Gwaldon, 7000 ft., on tree-trunk, June 1959, leg. N. S. Parihar 1959-1/29 [with *Porella densifolia* subsp. *appendiculata* (Steph.) Hatt. (= *Madotheca appendiculata* Steph.)], NICH & herb. Parihar. **Japan**: Prov. Tosa, Mt. Yokogura, July 23, 1940, leg. S. Hattori 4194, holotype of *Tuzibeanthus porelloides*, NICH; —, May 29, 1949, leg. K. Yokoda, holotype of *Lopholejeunea yokogurana*, herb. Kamimura & NICH; Prov. Musashi, Hikawa, Nippara, July 5, 1940, leg. S. Hattori 3486, 3501 & 3513, paratypes of *Tuzibeanthus porelloides*, NICH; —, Mt. Tensozan, July 6, 1940, leg. S. Hattori 3805, paratype of *T. porelloides*, NICH; Nara Pref., Dorokawa, 820 m. s. m., Aug. 12, 1960, leg. T. Kodama (= *Hepaticae Japonicae Exsiccatae* ser. 13, no. 650); Miyazaki Pref., Shiiba, ca. 500 m, Aug. 1951, leg. T. Amakawa (= *Hepaticae Japonicae Exsiccatae* ser. 4, no. 199).

Map 1, based on the above-cited data, shows the disjunctive distribution of this monotypic genus, a temperate Asian element, in Japan, Central and Southwest China, Burma, and Western Himalayas*. This taxon seems to be a calciphilous liverwort. In Japan it occurs in limited abundance in limestone areas; Mizutani (1961) remarked, "On limestones, on a thin humus over the rock or on tree bases and trunks in calcareous regions, altitude 500—1000 m s.m." Herzog (1930) also remarked for all of Handel-Mazzetti collections made in Szechwan and Yunnan, "An Stämmen und Kalkerde in der warmtemperierte und tropische Stufen, 1800—3325 m."



Map 1. Geographical distribution of *Tuzibeanthus* Hatt.

We wish to thank the directors and curators of bryophyte herbaria in Botanische Institut der Universität Wien, Conservatoire botanique, Genève, University of California, Dr. N.S. Parihar, Allahabad, India, and many other colleagues in Japan for supplying the above-cited materials to us, and also to Prof. A.J. Sharp, Knoxville, Tennessee, for his assistance with our manuscript.

References

- Chopra, R. S. 1938. Ind. Acad. Sci. **8** (6): 438. Hattori, S. 1947. Biosphaera

* Dr. N. Kitagawa, Nara, lately told us that he found this taxon also in Thailand.

1: 5 & 7. —, 1950. Jour. Hattori Bot. Lab. **3**: 47-48, fig. 39. Herzog, Th. 1930. in Handel-Mazzetti, Symb. Sinic. **5**: 43. Kamimura, M. 1952. Acta Phytotax. Geobot. **14**: 107, fig. 1. Kashyap, S. R. & R. S. Chopra, 1932. Liverworts of the Western Himalayas and Punjab Plain, pt. **2**: 21. Mizutani, M. 1961. Jour. Hattori Bot. Lab. **24**: 149-152, fig. V, 18-26. Schuster, R. M. 1961. The Bryologist **64**: 159-160, 166-167. —, 1963, Nova Hedwigia, Beiheft **9**: 99. Stephani, F. 1912. Species Hepaticarum **4**: 744. —, 1924. Species Hepaticarum **6**: 564. Verdoorn, F. 1934. Ann. Bryol. suppl. **4**: 118 & 121-123.

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Tuzibeanthus (ツジベゴヘイゴケ属) は苔類クサリゴケ科に属し、一属一種で日本・支那・ビルマ(新産地)および西ヒマラヤに不連続的に分布する。Schuster は本属を *Mastigolejeunea* の亜属としたが賛成できない。*Ptychanthus* に最も近い属である。最近ビルマ・西ヒマラヤの標本中に本種を見つけたので、この機会に本属に関する知見を整理し、分布図を作成した。本属はアジア温帯要素に属し、好石灰岩性と考えられる。

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○ヒロハヒルガオ *Calystegia sepium* R. Br. var. *communis* Hara ヒロハヒルガオは北半球の温帯各地に分布しているが、日本ではこれまで北海道と本州(北部と千葉県)から報告されているだけのようである。ところがわたしは 1966 年 8 月、これを壱岐島の西海岸近くで発見した。生育地は壱岐島(長崎県)郷の浦町里触(触は他地方でいう部落に当る)で、海岸から 100~150 m, 標高 10 m 内外の所である。また分布地と海岸の間には 1 軒の農家と背戸の山がある。生育地は道路の両側にあり、うち海側のものはラッカセイ畑の畦畔の草地や藪で、反対側のは路傍と続く畦畔に及んでいる。後者の群生地が続いてコヒルガオがはえているが、一部分入りこんでいる所もある。この生育地全体で 20 余株が数えられるが、西日本全域に未記録の本種が、玄海の孤島壱岐だけにどうして分布するのかその解釈に苦しむ。また壱岐産のヒロハヒルガオは、たくさん蕾をつけながらあと 2~3 日で開花という段階で全部落ちてしまう。しかしこれも 1 年の観察で、検討不十分であり、分布の問題などとともに続いて調査研究を進めたい。

(長崎県壱岐郡郷浦町 品川鉄摩)

[表紙カットの解説] トウモロコシの抽象化。これは南米ペルーの中部チャンカイ流域で大体 8~900 年前に発達した織物に現われた図案である。鳥、魚、人物、等の模様が多い中では少数しかでてこない例ではあるが、不定根(?)を示す根元、太い茎、先が分れた雄の穂、そしてふとった果実又は雌花序をうまく表現している。鳥が 2 羽いるのが面白い。足がはなれ、しかも長い嘴をつき差しているところから察するとハチドリだと私は思うのだが、トウモロコシのどの発育期に蜂鳥が来るのか、それとも単なる模様にすぎないのか気にかかっているのである。ペルー国リマの天野美術館の所蔵品から模写した。

(前川文夫)

[Explanation of the cut in the cover] An abstract figure of corn plant woven on the tapestry discovered from the ruins in Chancay valley, Peru. This figure is drawn from the specimen deposited in Museo Amano, Lima. (F. MAEKAWA).